

REMARKS

Claims 1-3 and 10-13 have been amended. Claim 23 is new. Support for the claim amendments can be found throughout the specification, e.g., at page 3, lines 22-24; and page 5, lines 20-22; and Figures 1 and 2. No new matter has been added.

Objection to claim 3

In the Office Action, claim 3 was said to be objectionable as being of improper dependent form. Claim 3 has been amended herein to depend from claim 2. Applicant contends that claim 3 is of proper dependent form, and withdrawal of the objection is proper and is requested.

Rejections under 35 USC §112, second paragraph

In the Office Action, claims 1-2 and 4-13 were rejected under 35 USC §112, second paragraph, as allegedly indefinite. Applicant does not agree.

Claim 1 was rejected under 35 USC §112, second paragraph, as allegedly indefinite; the Office Action stated that “no definition of the term “glass-like” was found in the specification.

Applicant traverses the rejection, and points out that the term “glass-like” is discussed in the present specification, e.g., at page 3, lines 22-24. However, the rejection is moot; without agreeing with the rejection, claim 1 has been amended to recite that the method of claim 1 is a method of depositing a non-polymeric dielectric coating layer. Applicant contends that this language is clear and is not indefinite.

The Office Action further stated that “the relationship between the ‘forming...’ step & the ‘depositing...’ step is unclear.” Without agreeing with the rejection, claim 1 has been amended and no longer recites a separate “forming” step; the rejection is therefore moot.

The Office Action even further objected to the word “throughout” in claim 1. Without agreeing with the rejection, claim 1 has been amended to recite that each of

the at least one coating layers is conformal on the surface of the substrate. Applicant respectfully contends that the language of claim 1 is clear and is not indefinite.

In the Office Action, claim 2 was rejected under 35 USC §112, second paragraph, as allegedly indefinite. The Office Action stated that the claim was ambiguous. Without agreeing with the Examiner's position, claim 2 has been amended to clarify that the sum of the thicknesses of the coating layers is within the recited range.

In the Office Action, claims 10 and 11 were rejected under 35 USC §112, second paragraph, as allegedly indefinite. Without agreeing with the Examiner's position, claim 10 has been amended to clarify that the step of forming a coating layer includes introducing a reagent for forming the coating layer. Claim 11 has been amended to recite that the reagent includes an element of the recited group of elements. Applicant respectfully contends that the language of claims 10 and 11 is not indefinite.

In the Office Action, claim 12 was rejected under 35 USC §112, second paragraph, as allegedly indefinite. Without agreeing with the Examiner's position, claim 12 has been amended to delete certain language to which the Examiner objected.

In the Office Action, claim 13 was rejected under 35 USC §112, second paragraph, as allegedly indefinite. Without agreeing with the Examiner's position, claim 13 has been amended to recite that the ion plating coating apparatus includes an evacuable coating vessel. Applicant respectfully contends that the language of claim 13 is not indefinite.

Rejections under 35 USC §103(a)

In the Office Action, claims 1-7 and 10-13 were rejected under 35 USC §103(a) as allegedly unpatentable over Knapp et al., U.S. Patent No. 5,753,319, in view of Hahn, U.S. Patent No. 4,990,233. In addition, claims 1-3 and 5-13 are rejected under 35 USC §103(a) as allegedly unpatentable over Knapp et al., U.S. Patent No. 5,753,319, in view of Zoller, U.S. Patent No. 5,597,622, or vice versa. The rejections are traversed.

According to the Office Action, Knapp discloses multilayer ion plating, but “by not necessitating a nonplanar substrate differ from the present claims that require conformal deposition on a nonplanar surface.” The Office Action then states that Zoller or Hahn teach ion plating of metal oxide materials onto 3-dimensional nonplanar substrates. The Office Action then concludes that it would have been obvious to combine the reference teachings. Applicant disagrees.

The present claims are directed to methods for depositing a non-polymeric coating on a nonplanar surface having at least one interior or exterior corner, including surfaces having features such a grating, at least one undulating surface, at least one well, or at least one stepped surface. Such surfaces are difficult to coat effectively, often resulting in uneven coating and degraded surface characteristics after coating (see, e.g., the present specification at pages 1-2). The process described in the Knapp patent was understood, at the time the present invention was made, to be useful for coating surfaces which are substantially planar or only slightly curved, such as the surface of a lens; however, such a process would not have been understood by one of ordinary skill in the art to be useful for coating nonplanar surfaces, as recited by the pending claims.

The Hahn patent cannot “bridge the gap” between the teachings of the Knapp patent and the presently claimed invention. As the reference is understood, the Hahn patent describes methods for treating surfaces of check valves, preferably by ion implantation. Although ion plating is mentioned, no examples of ion plating are provided. While the Hahn patent states that “a dissimilar metal layer [] is preferably applied to the entirety of the interior-facing surfaces of check valve 10”, the Hahn patent does not provide any evidence to suggest that such layers are conformal. In addition, the interior surfaces of the check valve body of Hahn appear to be mostly smooth and do not appear to include sharp corners (see, e.g., Figure 5 thereof).

The Zoller patent also does not “bridge the gap” between the teachings of the Knapp patent and the presently claimed invention. As the reference is understood, the Zoller patent describes methods for applying optical coatings to substrates such as lenses. The Zoller patent does not disclose a method for depositing a non-polymeric coating on a nonplanar surface having an interior or exterior corner, including surfaces

having features such a grating, at least one undulating surface, at least one well, or at least one stepped surface.

Applicant contends that the combination of the cited teachings of Knapp, Hahn, and Zoller do not and cannot render obvious the methods of the pending claims. Absent the teachings of the present specification, one of ordinary skill in the art could not have combined the references to arrive at the claimed methods. Even if such a combination were made, prior to the present invention, one of ordinary skill in the art would not have had a reasonable expectation that the methods of the references (alone or as combined by the Examiner in the Office Action) would be effective to provide a conformal coating on a nonplanar surface, as presently claimed.

Reconsideration and withdrawal of the rejection is proper and the same is requested.

Conclusion

Early and favorable reconsideration is requested.

Applicant conditionally requests any extension of time required for consideration of this response. The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 60158 (70919).

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Respectfully submitted,

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